427 Agricultural Research Bureau. It is doubtful whether the results
175 have changed greatly since then. The following are the 1934 findings:

Province	No. of Hsien Reported	Cash Rent	Crop Rent	Share Rent
Ninghsia	5	46.1	18.5	35.4
Chinghai	7	10.6	53.8	35.6
Kansu	21	14.3	51.0	34.5
Shensi	51	15.1	59.0	25.9

(China Handbook 1937-1943 p. 607.)

3. Livestock

175 The chief livestock are sheep, oxen, donkeys, mules, and
231 horses. The following chart gives the number of livestock in the four areas as of March, 1937, in thousand head. (T. H. Shen p. 289. Notable omissions in this table are yak and camel. There is a fairly large number of yak in Chinghai and camel in Ninghsia and Chinghai.) The next series of charts gives the livestock number for the war years.

Province	Horses	Donkeys	Mules	Cattle	Water Buffalo	Sheep	Goats
Ninghsia	17	44	8	39	-	739	225
Chinghai	50	79	26	89	-	359	150
Kansu	151	581	160	802	1	2,625	1,646
Shensi	128	359	131	914	7	375	657

	Pigs	Chickens	Geese	Ducks	Total
Ninghsia	52	186	2	6	1,318
Chinghai	74	312	2	3	1,194
Kansu	984	3,212	53	229	10,544
Shensi	967	2,747	7	99	6,491
Total Number of Livestock (in thousand head)					19,547

The total number of livestock in China for 1937, excluding Sinkiang, Tibet, Outer Mongolia, Sikang, and Manchuria, was 445,078 animals. This meant that the Northwest possessed about four per cent of all livestock in China for the year 1937.

231 As shown by the chart, one of the most important animals is
236 sheep; wool is exported from the region. In the Northwest the
43 cost of wool production is high in relation to selling prices. Sheep farmers operate at a deficit due chiefly to the low production of wool per head of sheep and to the high annual death loss from starvation, disease, and other causes, whereas in other sheep and wool producing countries the income from wool is at least forty per cent of total income, in the Northwest, the low production of wool per head of sheep allows only an income of twenty per cent. The estimated annual loss of sheep is around ten per cent. Of the total
236 amount of wool produced in China from 1941-1945, the five pro-
433 vinces of the Northwest, including Suiyuan, produced 69.7 per cent.

1: Washington S-4 (no date) 1956 AF13 Northwest China AF13

236 433 (T. H. Shen, p. 326.) The following is in 1,000 metric tons:

Province	Sheep Wool	Camel Hair	Cashmere
Kansu	3,611	180	30
Ninghsia	1,846	299	92
Chinghai	4,840	60	-
Sinkiang	12,853	22	10
Total	23,150	561	132

241 In Chinghai and elsewhere in the region fertilizer is scarce and the thick sod on the uncultivated hilltops is burnt in piles to help meet the fertilizer requirements of the fields below. The 311 following is a description of the principle livestock raising area 233 in Kansu and Chinghai. "The pasture land in Kansu and in the agricultural part of Chinghai is mostly the hill land far away from the cultivated fields and villages. It is not owned by farmers in- [423] dividually or collectively. It is public land. The right to graze these pastures is determined by the natural location of the villages in relation to these hills rather than by law. The nearest villages have more chance to use it. Sometimes one finds several villages grazing their sheep on the same hills without trouble. But if too many villages use the same pasture a definite agreement is made between the villages to limit certain villages to particular pastures. Such occasions rarely occur because the increase in sheep is naturally in accordance with the amount of pasture available. It is only in time of severe drought that the pastures are overstocked.

311 "The pasture of nomadic Chinghai (formerly a part of Tibet) is 423 also public land but different tribes and clans have the exclusive 233 right to use only such land as has been allotted to them by the government or by tradition. Within the boundaries of a certain tribe the pasture is open to all its member families, but no family owns any particular lot. There is no fencing or walls.

311 "The condition of these pastures is determined by annual rain- 233 fall. More rain and snow assure better grass. No human effort, such as seeding, manuring, irrigation or drainage is ever applied." (Buck, Land Utilization p. 176.)

4. Forestry

313 The following chart indicates the percentage of forest land for the region.

Province	Percentage of land in Forest
Kansu	6.0
Ninghsia	4.0
Shensi	16.0
Chinghai	2.0

If we leave out Shensi as a section of the Northwest, as George B. Cressy does, the Northwest is reported to have only one twentieth as much standing timber as the Northeast region (Heilungkiang, Kirin, Liaoning), or 197,429,814 cubic meters, which is located

2: Teichman G-5 (1919) 1921 AF13 Northwest China AF13

without a scrap of vegetation. A little gold-washing is carried on in this neighbourhood. There were numerous rapids, over which our rafts rode triumphantly. Navigation, carried out by sweeps at the bow and stern, consists in avoiding the rocks and sand-banks and keeping the raft clear of the cliffs where the river swirls round a corner. Unless engaged in a particularly fierce rapid but little attention is paid to these cliffs, and on several occasions my raft crashed against the perpendicular wall of rock in a way which would have smashed a boat to pieces, but without doing any damage beyond shifting a few telegraph poles. In the bad rapids, however, where the water is heaped up into the centre of the river in a tongue like the big rapids on the Upper Yangtzu, great care is taken, since the pace is so tremendous that the raft could scarcely survive the impact with a large rock. Towards evening we noticed large numbers of goral (or wild goat of some kind) in these gorges, clambering about the precipitous cliffs in tens and twenties; one could have shot any number from the raft, but it would have been impossible to stop and retrieve them.

These gorges last for six or seven hours, until finally a picturesque temple on a bluff overlooking the river marks the exit from the gorge and the approach to Wufang Ssu, a boating village in a small plain on the left bank of the river. Sheep are grazed extensively on the semi-desert hills in the neighbourhood, and wool is collected here and shipped down river for the Tientsin trade.

From Wufang Ssu the river flows east and north-east again. Two hours further on another long gloomy gorge, with many rapids and whirlpools, is entered, the passage through which takes seven to eight hours; coal is exposed in the cliffs in places. At length the mountain walls give way to huge sand-hills and then to an irrigated alluvial plain, and two hours further on Chungwei Hsien is reached. Chungwei, lying inland about five li from the left bank of the river, is quite an important town, the centre of a rich fertile region where the desert is irrigated by canals from the Yellow River, and also a market for the wool trade.

Below Chungwei the Yellow River becomes a broad stream obstructed by sand-banks and shallows, flowing through an immense plain dotted with low hills and irrigated

Stretches.

2: Teichman G-5 (1919) 1921 AF13 Northwest China AF13

501 house-boats; they are used for the conveyance of the wool down stream, and are as often as not tracked up empty. For the convenience of future travellers on this route, it may be stated that the hire of one of these large boats from Ninghsia to Paot'ou should be about 35 taels, and of a small boat or raft from Lanchou to Ninghsia about 25 taels; but with a limited amount of baggage the journey can be accomplished very much more cheaply by hiring accommo-
502 dation on a lader. wool boat. The rapidity of the journey depends on the amount of wind met with, as with high winds, which are frequent in the Ordos, the clumsy scows are blown ashore or on to sand-banks, and have to tie up till the weather calms. Night travel is possible part of the way round the Ordos. It is a peaceful journey, navigation consisting in keeping the boat more or less in the middle of the current and watching the banks drift by. The boatmen are mostly Mahomedans, and thoroughly up to their job. We were much delayed by wind and other causes and took ten days to get to Paot'ou, the actual floating time being about 100 hours.

133 We finally left Ninghsia, or rather Hung Ch'eng, on September 9th and reached Shihchu Shan in the evening of the following day. The weather, as all the way down the river, was beautiful, cold in the early mornings, but brilliant sun during the middle of the day. Between Ninghsia and Shihchu Shan the river is a broad and placid stream with many shallows and islands. On the right hand is sandy desert, the Ordos, now included in the "Special Territory" of Suiyuan; on the left hand the land is still a part of Kansu province, a strip of waste land along the river, behind which lies the irrigated belt, with cultivation, trees,
[136] and houses, backed by the Alashan mountains. In places the sands were grey with geese. Shihchu Shan, locally
439 known as Shihtsuitzu, is an unwalled township built of mud, which appears to owe its existence to the wool trade.
• 236 It is a weird and desolate little place, lying on the left bank at a point where the Alashan mountains and a low range in the Ordos converge on the river, which narrows to a few hundred yards in width. All around are desert hills. The community, consisting of the native agents of the foreign wool exporters of Tientsin, is engaged in drying and re-

2: Teichman G-5 (1919) 1921 AF13 Northwest China AF13

packing the wool which comes down from Western Kansu by boat on the river and by camel overland, and in collecting local produce from the Mongols. The overland trail from Paot'ou, eight to ten marches from well to well across the Ordos desert, here strikes the Yellow River, crosses by a ferry, and continues up the plain to Ninghsia. Supplies must be laid in at Shihchu Shan to last to Paot'ou, little or nothing being obtainable in the Ordos *en route*.

Leaving Shihchu Shan we passed finally out of Kansu into the Ordos. The river runs for some hours with a rapid current between bare mountains, which gradually recede and give way to sandy desert. After about twelve hours drifting down stream Tengk'ou, a desolate little village in the desert on the left bank, is reached, and some eight hours further on the township of Santaohotzu is passed, where there is a Catholic Mission and a considerable Chinese population engaged in agriculture round the old branches of the Yellow River. The river banks on either side are lined much of the way with a belt of willow scrub, which furnishes a most useful supply of fuel to the boats going up and down. The current is fairly strong through the Ordos, considering the level nature of the country, but we were frequently compelled to tie up to the bank to wait for the wind to drop. On one of these occasions my five ponies, which were being exercised on the bank, took alarm at something and galloped off into the desert. We followed them for miles and then lost their tracks on some hard stony ground. The country was desert without a sign of life except for numerous antelope and an occasional camel turned out for the summer, and the boatmen expressed the opinion that we should never see the ponies again unless we chanced on them further down stream, as though they had galloped off inland they would be bound to return to the river for water. On the following day after having drifted many miles further down we fortunately spied a Mongol watering his camels on the bank, who turned out to have met the ponies inland, and they were soon recovered, very hungry, thirsty, and tame.

Lower down we met again and again with the most violent winds, necessitating long and weary delays in the desert. There was some trouble with Mongol brigands going on in this neighbourhood, and on one occasion shots

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remarkably open and honest nature which quickly drew me closer to him. He wanted, of course, to do business with me, but he did not, like all the rest, waste a lot of time charging the highest prices which one then had to force down to the proper amount with a lot of haggling. I bought sheep, yaks and horses from him and then he told me a great deal about his life, about the many, many disputes with the Horkurma Tibetans up at the source waters of the Hwang Ho. Once they drove away 100 camels belonging to the Barun, and gave them up again only for a high ransom although they could not even use them in their swamps. He sighed over the life of the nomad, over the great nuisance of having to change camp-sites, of endlessly having to pack and unpack household goods, and said he envied the farmer who could call a stationary house his own. He complained of their poor customs, of the fact that within their families, in decided contrast to those of the Chinese, they always differentiate very strictly between "mine" and "thine," that their women have too many rights and that this causes endless quarrels, that trading was difficult because the women had too little vision and would often not permit the most favorable cattle sale. "The women take pride only in having large herds, they never consider how quickly an epidemic can snatch away the animals, or robbers carry them off." At the time of my visit, people were busy shearing the sheep. The thick winter wool was cut off and half pulled out with iron shears a foot long. (1)

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1. A picul (100 catties or 65 kilograms) of the rather coarse wool of Mongolian sheep cost 4 taels in Barun. Two and one-half tael were charged for the transport from Tsaidam to Dankar, so that on the Chinese border a picul costs the merchants to 6 1/2 taels=20 marks. While I was in Barun a mounted courier arrived from Dankar with a document saying that the agents of the Yang Hang (the Tientsin firms) had set the price per picul at 9 taels for this year and could not give a cash more. The resultant increase of 2 1/2 taels for the small wool-buyer was considered much too little. The wool business of Tsaidam was thereby supposed to have become practically profitless. The year before, 11-12 taels was paid per picul by the Yang Hang in Dankar.

The yak cattle are also sheared in July, that is to say, their belly hair, which is used for making Tibetan tent walls and for ropes, is plucked out by the owners. The

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entire body of the yak cattle is covered with a thick mat of hair which, on the belly, becomes a foot long and changes to rather stiff hairs. The wool as well as the bristles are always pitch-black in wild yaks and usually so in domestic ones. But after the hairs have been plucked out and exposed to the weather and to moisture, they quickly turn a reddish-brown and then resemble old mammoth-hairs such as one finds in the ice of Siberia; the mammoths were undoubtedly all raven-black at one time like the wild yaks.

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After a few days of rest three of us, Han, Tsch'eng and I rode toward Barun kurä with only mules and horses. We again traveled down the stony and pathless Wulasetä Valley and then, as a result of a misunderstanding, set out from the mouth of the valley in a north-northwest direction into the plain. Thus it happened that when we again met human beings we were in Dsun, that is, in the territory of the banner-dsassak of Dsun which was west of Barun. Behind a 10 kilometer-wide, barren belt of rubble known as the schala, which embraces the foot of the mountain, there is a zone of dunes scarcely one kilometer wide following the southern border of Tsaidam; then there is a more or less wooded zone consisting of tamarisk, and finally, beyond this, the pasture land, the zone where /348/ the water that flows down from the mountains and is absorbed by the schála, gushes out again, irrigating and making the ground fertile once more before it loses itself in sterile salt swamps toward the middle of the Tsaidam basin.

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Here in Dsun I again tried to add to my herd of sheep, but no one had the courage to do business with me. It is the custom in all five dominions of the Tsaidam Mongols that the rulers have a sort of business monopoly in their territory. Their subjects may carry on business with a stranger only when the ruler has covered his needs or if he expressly permits it. Dyoba Dyentsen, too, first had to get permission from the dsassak to sell me his animals.

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Because the dsassak of Dsun lived too far off my route, I myself did not visit him. He is said to live on a walled estate in the middle of his country. His domain is about 40 kilometers long and 5 kilometers wide and consists of fertile pasture land. Belonging to it is also an area of wasteland extending over many days' marches. The Dsun (140 families with one squadron) graze their herds only in the plains, in the narrow zone between the dunes on the edge of the Piedmont gravel and the salt swamps north of this.